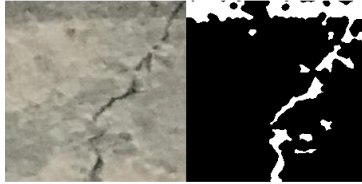


Introduction to Module 3 Quiz

You've deployed your algorithm for classifying concrete cracks as either severe or mild risk. You are now in charge of directing workers to repair any severe cracks found.

Previously in this module, you found that outliers in the number of regions detected indicated that the automated segmentation function performed poorly. For example, here is the segmentation for image 00148.jpg.



1. Knowing that it is expensive to send workers to repair cracks, but you also don't want to miss any truly severe ones, how would you deal with these outlier images you've found using the **NumRegions** variable?

1 point

- ☐ Remove the outlier images from the dataset
- ☐ Do nothing and treat the outlier images the same as the rest of the dataset
- ☒ Evaluate the outlier images to manually label them as severe or mild
- ☐ Prioritize the cracks in these outlier images for repair

Instructions for Questions 2-4

2. Assume a single pixel in every image has the dimensions of 0.5 mm by 0.5 mm. What is the median **MaxWidth** of just the cracks labeled "Severe"? Provide your answer in millimeters.

1 point

17.46

3. Identify all outlier entries in the **MaxWidth** variable using the median method with a threshold factor of 3. You are encouraged to use the Clean Outlier Data Live Task.

1 point

Outliers are defined as values that deviate significantly from the median **MaxWidth**. After identifying these outliers, compare their **MaxWidth** values to those of the non-outlier images.

Which of the following statements is true regarding the identified outlier images compared to the non-outlier images?

- ☐ The outliers images all have **lower** **MaxWidth** values than the non-outlier images.
- ☒ The outliers images all have **higher** **MaxWidth** values than the non-outlier images.
- ☐ The outliers images all have **both lower and higher** **MaxWidth** values than the non-outlier images.

4. Inspect a few of the images marked as **MaxWidth** outliers. Again, knowing that it is expensive to send workers to repair cracks, how would you deal with these new outlier images you've found using the **MaxWidth** variable?

1 point

- ☐ Remove the outlier images from the dataset
- ☐ Do nothing and treat the outlier images the same as the rest of the dataset
- ☐ Evaluate the outlier images to manually label them as severe or mild
- ☐ Fire your team and rewrite a new segmentation and analysis function that will be 100% perfect.
- ☒ Prioritize the cracks in these outlier images for repair

5. For the next two questions, consider the earlier video of liquid filling a container (frame 92 from the video is shown below).

1 point



Which image processing methods could be reasonable to segment the liquid (the dark liquid with or without the light foam on top) from the background in each frame of the video?

Choose ALL that apply.

- ☐ Perform background subtraction.
- ☒ Perform color threshold.

☒ Convert image to grayscale and perform an intensity-based threshold.

6. Now consider that your application requires you to measure the area of just the light foam on top.

1 point

Which of the three methods would you choose to perform the initial segmentation?

☐ Background Subtraction

☐ Grayscale Thresholding

☒ Color Thresholding